Entegris

450 MM SINGLE WAFER SHIPPER

User manual

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Introduction

In the process of scaling up your 450 mm program, you need reliable wafer storage and shipment to ensure that your development remains on schedule. You cannot waste valuable time replacing expensive wafers that have been contaminated or damaged. Entegris' 450 mm single wafer shipper can alleviate this issue by providing a safe environment for you to ship and store your test wafers.

Constructed of strong, engineering-grade polymers, this shipper maintains a clean environment, while its edge-only wafer contact internally protects against device damage and surface area contamination. Entegris has been working with you to protect your wafers during shipment and storage for over 40 years and will continue to support you in the transition to 450 mm.

Along with protection from the shipper, we've developed secondary packaging to ensure your wafers are safe and clean upon arrival. Our 1-capacity and 5-capacity packages successfully pass ISTA-2A drop and vibration testing, offering you a complete 450 mm shipping solution.

Features and Benefits

Feature	Benefit
Edge-only wafer contact	Protects against damage and surface area contamination
Hinged design with detent feature	Holds cover in upright position, minimizing work area footprint
Vacuum wand access area	Allows wafer pickup with vacuum wand
Elastomeric gasket and breather filter	Maximum particle barrier
Accommodates multiple wafer thicknesses	For nonstandard applications
Stackable	Efficient storage
RFID capable	Process and inventory management

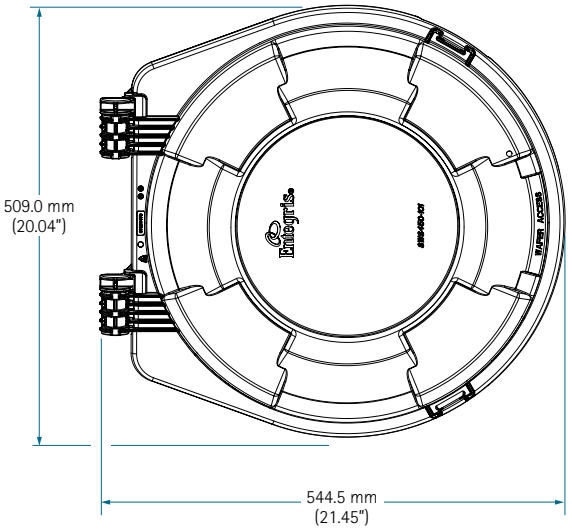
Specifications

Wafer diameter:	450 mm (SEMI® M76 compatible)	
Wafer thickness:	450 mm (SEMI M76 compatible)*	
Dimensions:	Length	544.8 mm (21.45")
	Width	509.0 mm (20.04")
	Height (closed)	59.7 mm (2.35")
	Height (open)	554.5 mm (21.83")
Weight:	Empty	2.47 kg (5.45 lb)
	With wafer	2.81 kg (6.19 lb)

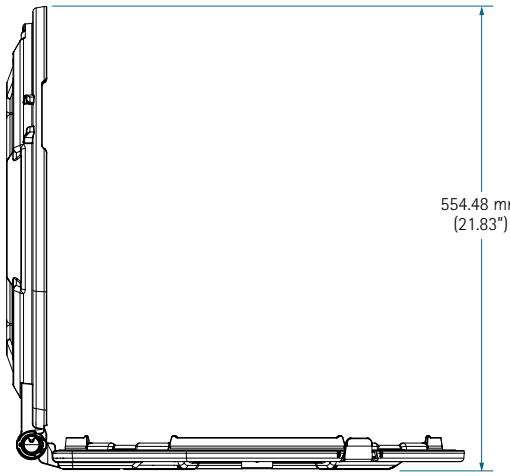
**Packaging development and product performance testing based on SEMI M76 wafer standard. Nonstandard wafers may require additional verification testing.*

Dimensions

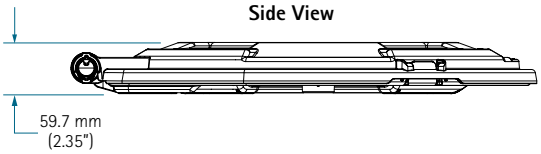
Top View



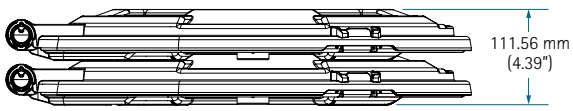
Side View (open)



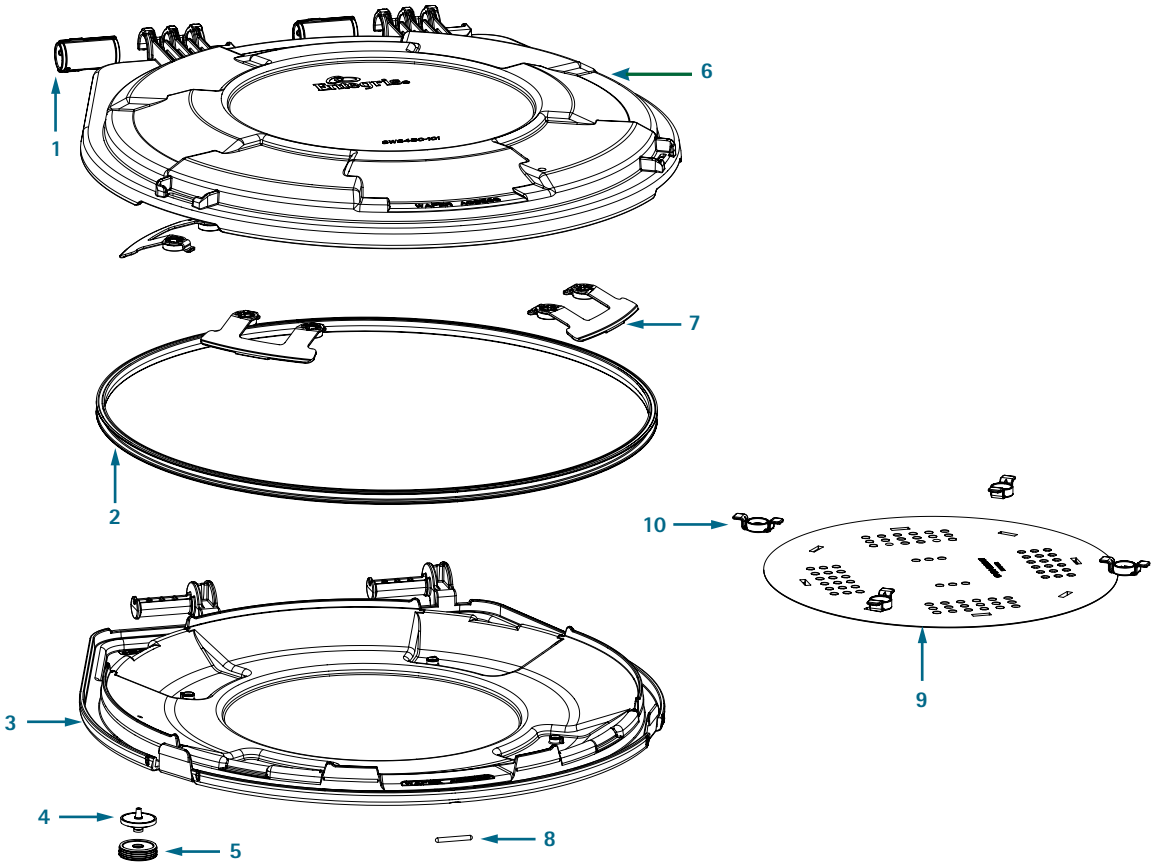
Side View



Side View (2 units stacked)



Components



Part Number	Item	Description	Material	Qty.
01-1014481	1	Hinge bushing	Acetal (POM)	2
01-1014741	2	Gasket	Thermoplastic elastomer (TPE)	1
01-1014478 01-1017656	3	Base	Polycarbonate (PC) Polycarbonate (PC)	1
01-1017573	4	Filter breather	PTFE membrane	1
01-1016406	5	Filter retainer	Thermoplastic elastomer (TPE)	1
01-1014479 01-1017658	6	Cover	Polycarbonate (PC) Polycarbonate (PC)	1
01-1014480	7	Cushion	Polycarbonate (PC)	4
1420-210-01	8	Option - 134.2 kHz RFID capsule	Glass enclosure	1
01-1004283-01	9	Option - Clarilite® wafer	Polycarbonate (PC)	1
01-1014742	10	Option - Clarilite wafer retainer	Polycarbonate (PC)	4

General Use Instructions

Opening and Closing

The single wafer shipper latches are a permanent, molded feature of the base. To unlatch the shipper, simply push inward on the tab that extends through the top cover in the locations shown by the arrows in Figure 1. To minimize particles, it's recommended to open and close the shipper slowly.

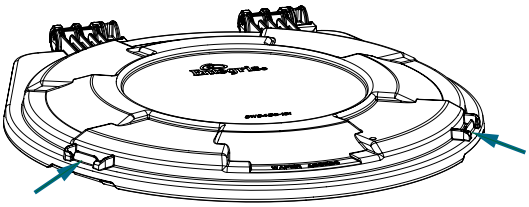


Figure 1.

The SWS450-101 incorporates a detented hinge that holds the cover in an upright position to minimize the need for a large workspace when placing or removing wafer as shown in Figure 2.

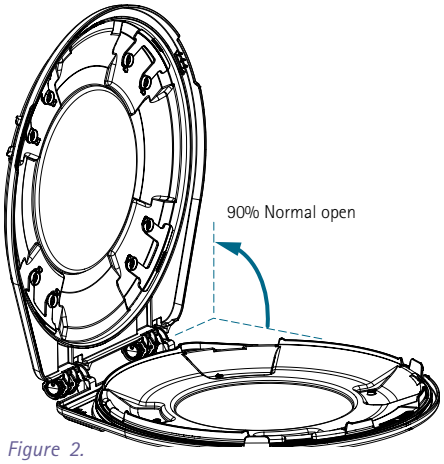


Figure 2.

The SWS450-101 cover can also be opened to a flat 180° if desired by applying additional pressure to overcome the hinge detent shown in Figure 3.

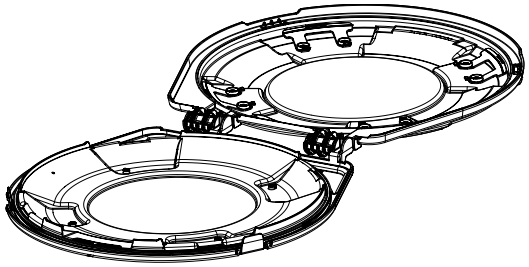


Figure 3.

Wafer Access Options

Vacuum wand access is provided to the underside of the wafer at the front of the shipper as shown in Figure 4.

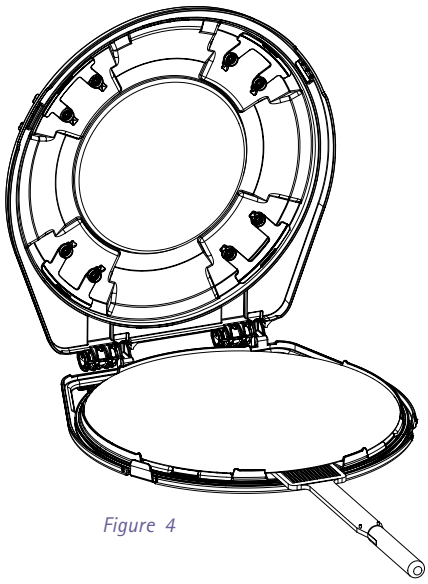


Figure 4

Access to the edge of the wafer is also provided in four locations indicated by the arrows in Figure 5.

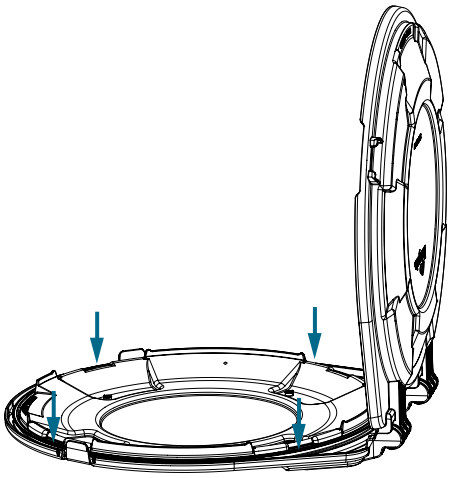


Figure 5.

Assembly with Wafer

Remove the SWS450-101 from packaging materials and clean as required. Refer to the *Assembly, Disassembly and Cleaning Recommendations* section.

Place the wafer into the bottom tray as shown in Figure 6.

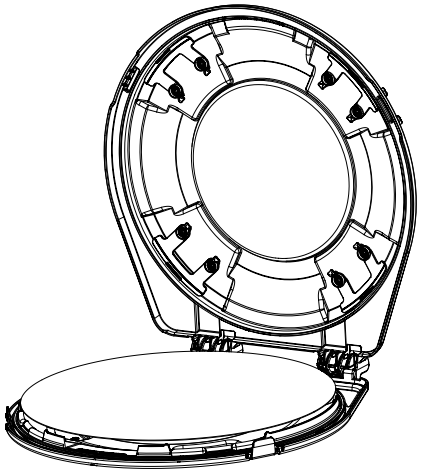


Figure 6.

Controlling the Wafer Environment for Shipping or Long-term Storage

The SWS450-101 comes with an elastomeric gasket that is designed to provide particle protection to the wafer but will not function as a moisture barrier. To manage particle contamination in transit the SWS450-101 should be bagged twice with appropriate cleanroom compatible bags and sealed using a light vacuum (5 mils PE recommended). A third moisture barrier bag with a desiccant pack inside should be used with light vacuum and sealed to reduce the potential for wafer haze events caused by moisture condensation due to changing temperature extremes in transit.

Barrier bags should be a minimum of 5 mils in thickness and have a water vapor transmission rate (FED 101) of 0.0006 gms/100 in²/24 hrs.

Do not exceed 6 inches of H_2O when vacuum sealing the bags or the shipper could be damaged.

Packaging for Shipment

Entegris offers multiple options for packaging solutions for the SWS450-101. Our packaging has been tested to exceed the requirements established by ISTA-2A for shock and vibration performance (International Safe Transit Association performance test for Individual Packaged-Products weighing 150 lb [68 kg] or Less).

If an alternative packaging system is to be used, the packaging system must be tested to ISTA-2A or equivalent to assure proper performance and prevent wafer breakage as 450 mm wafers are very fragile and need to be protected when shipped.

Secondary Packaging Options

When shipping only one wafer is required, the use of Entegris packaging 01-1016902 (Figure 7) is recommended. If larger numbers of wafers need to be transported, Entegris packaging 01-1016903 (Figure 8) holds up to five single wafer shippers.

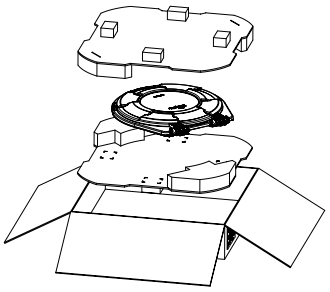


Figure 7. 01-1016902

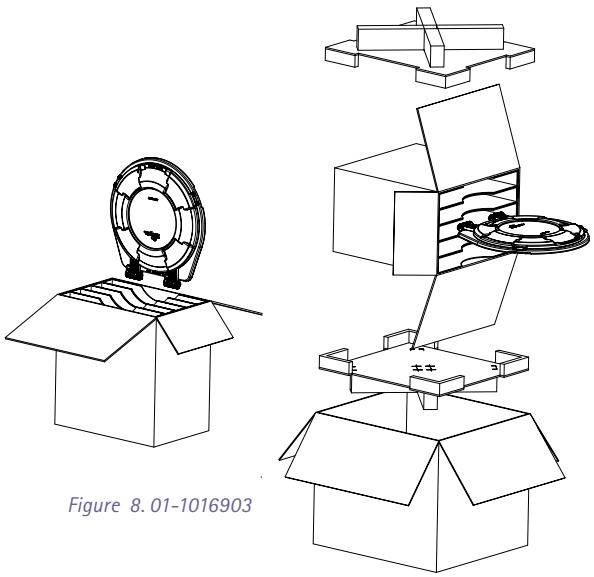


Figure 8. 01-1016903

Assembly, Disassembly and Cleaning Recommendations

Many different types of systems may be suitable to clean the SWS450-101, but should use deionized water only. It is not advisable to clean this shipper in solvent-based cleaning systems. When drying the SWS450-101 the temperature of the part should not exceed 70°C (158°F) or damage may occur. For the best cleaning results it is recommended that the product be partially disassembled to help clean and dry the hinge and gasket components.

To disassemble the SWS450-101 rotate the hinge 270° off the edge of a work space. See Figure 9.

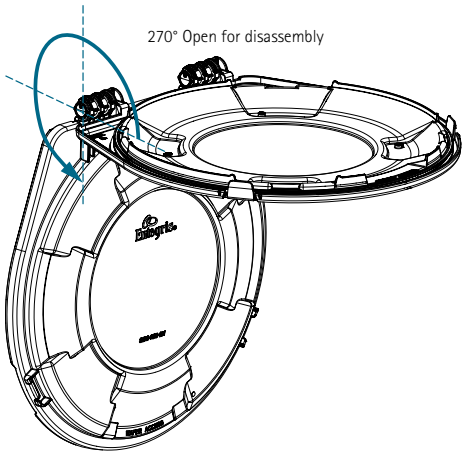


Figure 9.

Once the product is in this position, the cover can be removed by sliding the cover off the hinge pin attached to the bottom. It is not necessary to remove the bushings from the cover when cleaning. See Figure 10.

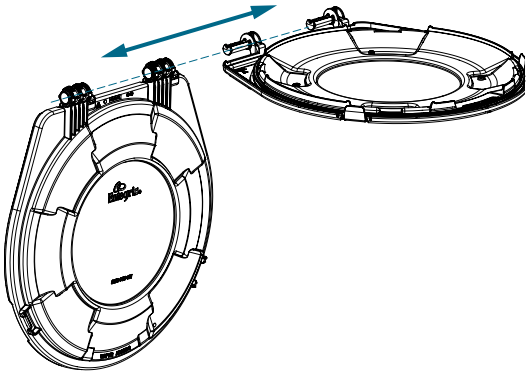


Figure 10.

The gasket can be removed and cleaned separately to improve cleaning efficiency and reduce drying time (Figure 11).

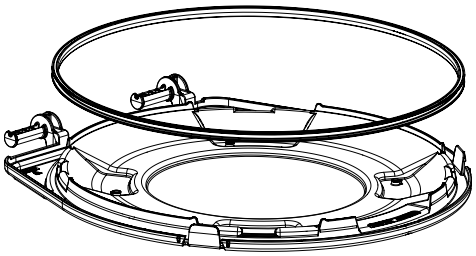


Figure 11.

It is also recommended that the breather filter assembly be removed for cleaning. See Figure 12.

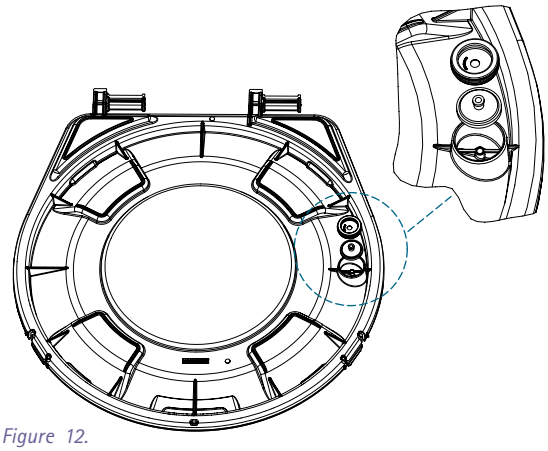


Figure 12.

Figure 13 shows proper breather filter and retainer orientation. To remove the assembly from the SWS450-101 apply light upward pressure to the inside beveled surface of the filter retainer with a flat blade screw driver or similar device.

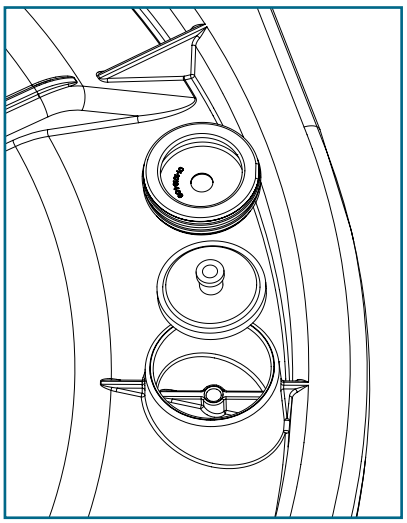


Figure 13.

If recording the number of product uses is desired, a grid feature is provided on the bottom of the single wafer shipper (Figure 14) that can be marked using a permanent marking device like a spring loaded center punch. Marking should be done prior to cleaning the product.

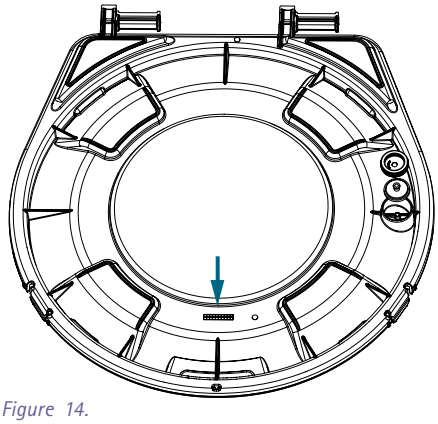


Figure 14.

In the unlikely event that the bushings need replacement, they can be easily removed after the cover is removed from the base by applying pressure and sliding in the direction shown in Figure 15. The bushings are designed to be installed in one direction only.

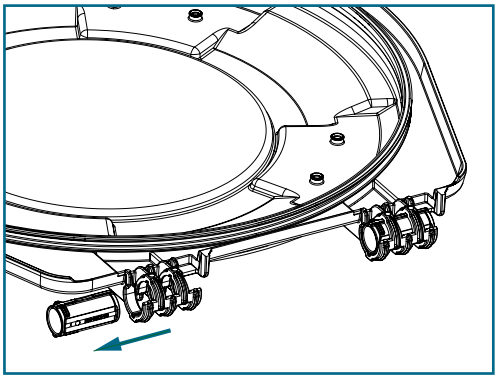


Figure 15.

The Clarilite wafer is an optional device that is useful in minimizing moisture and oxygen in the SWS450-101 when the shipper is sealed in a moisture barrier bag for shipment or long-term storage. The Clarilite wafer can be easily snapped into or removed from the bottom of the SWS450-101 with the four retainer clips shown in Figure 16.

The Clarilite wafer housing must be cleaned separately from the single wafer shipper.

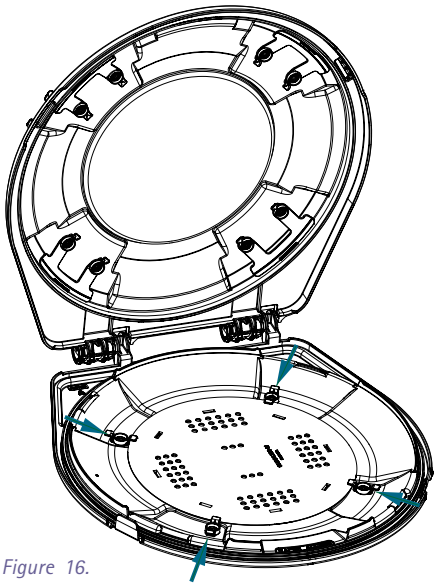


Figure 16.

It is not necessary to remove the wafer cushions shown in Figure 17 for cleaning, but they are easily replaceable if damaged.

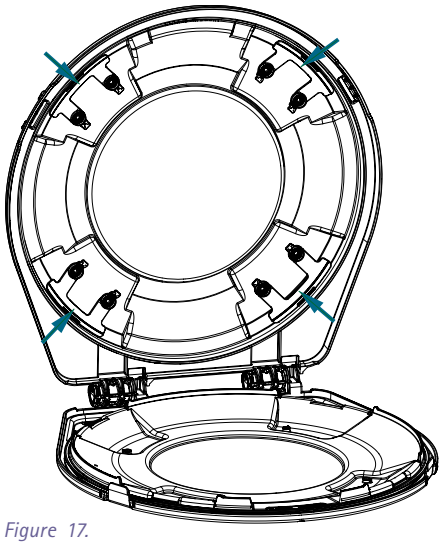


Figure 17.

Ordering Information

450 mm Single Wafer Shipper

Part Number

SWS450-101-__ B - N - __ - __ - N

Material
A = Polycarbonate (PCR-80)
B = Polycarbonate (Steripure)
C = Other

Port
B = 01-1017573 Millex® filter (left side)

RFID
N = None

Purification
C = Clarilite wafer
N = None

Clean
C = Cleaned
N = None

Example: **SWS450-101-A-B-N-N-C**
Material = Polycarbonate (PCR-80)
Port = 01-1017573 Millex filter (left side)
RFID = None
Purification = None
Clean = Cleaned

Product Information

As Molded Product

The SWS450-101 is manufactured within a non-cleanroom environment; therefore it is recommended that this product be cleaned prior to usage. Entegris cleaned product may be offered; please contact the factory for more information.

Product Reuse

If the SWS450-101 is properly handled and maintained, it is capable of being reused many times.

In order to maximize the number of reuses the following guidelines should be followed:

- SWS450-101 assembly should be cleaned after each use
- Thoroughly inspect the single wafer shipper for damage, loose components or excess wear prior to reuse
- Entegris supplied secondary packaging should be used
- Maximum temperature should not exceed 70°C (158°F) during use or storage

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ENTEGRIS, INC.
Corporate Headquarters | 129 Concord Road | Billerica, MA 01821 USA
Customer Service Tel. +1 952 556 4181 | Customer Service Fax +1 952 556 8022
In North America 800 394 4083 | *www.entegris.com*

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